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EXAMINER

THOMPSON JR, FOREST

ART UNIT PAPER NUMBER

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Paper No. 26

Application Number: 09/392,018  
Filing Date: September 08, 1999  
Appellant(s): MADOFF ET AL.

**MAILED**

JUL 15 2003

**GROUP 3600**

Denis G. Maloney  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 04/15/2003.

**(1) Real Party in Interest**

A statement identifying the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) Status of Claims**

The statement of the status of the claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Invention**

The summary of invention contained in the brief is correct.

**(6) Issues**

The appellant's statement of the issues in the brief is correct.

**(7) Grouping of Claims**

Appellant's brief includes a statement that claims 1-30 and 32-34 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

**(8) Claims Appealed**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) Prior Art of Record**

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 11, 21, and 32 are rejected under 35 U.S.C. 112, second paragraph.

This rejection is set forth in prior Office Action, Paper No. 17.

Claims 1-5, 10-15, and 18-30 are rejected under 35 U.S.C. 102(e). This rejection is set forth in prior Office Action, Paper No. 17.

Claims 6-9, 16-17 and 32-34 are rejected under 35 U.S.C. 103(a). This rejection is set forth in prior Office Action, Paper No. 17.

The rejection of claims presented in the Final Rejection (see Paper #17) is presented below:

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 11, 21 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: determining an opening price for a product. Claims 1, 11, 21, and 32 state in the preamble a method for determining an opening price, a computer program product for determining an opening price, a system for determining an opening price, and a method for determining an opening price, respectively. However, no claim steps in these claims present an opening price as a feature of the invention. Correction is required.

***Claim Rejections - 35 USC § 102***

3. Claims 1-5, 10-15, and 18-30 are rejected under 35 U.S.C. 102(e) as being anticipated by **Rickard et al.** (U.S. Patent No. 6,016,483)

Claim 1: **Rickard et al.** discloses:

- receiving orders from customers for the product (col. 8 lines 6-34);
- determining an imbalance condition between received buy orders and received sell orders for the product (col. 9 lines 3-21); and
- posting an allocation message to market maker participants to communicate the market maker participants' expected allocation of the imbalance for execution by the market maker participants at an initial opening of the market on the side of the imbalance in the event that the imbalance exists at the opening (col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25), as disclosed by **Rickard et al.** in the disclosure:

- Col. 6 lines 34-60:

Each market maker comes to the opening with his or her own current position (as specified by delta and gamma) and his or her desired target position after the opening (as specified by delta and gamma). The desired target position may be dependent upon the absolute and relative values of implied volatilities determined at the opening. These current and target positions impact the market maker's preferences on participation in the rectification of imbalances in public orders among

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the different series. Thus, according to the principles of the present invention, the assignment of public orders can be optimized across all market makers.

The present invention proceeds in two stages. At the first stage, the present invention determines a reasonably consistent set of implied volatilities that will maximize a weighted volume of trades across all series at the opening. At the completion of the first stage, there generally will be a residual imbalance in the public orders in each series that do not match off between buyers and sellers. These residual imbalances among public orders are required to be offset by assigning contra positions to the market makers. Accordingly, at the second stage, the present invention assigns residual public orders to market makers so as to minimize a cumulative measure of deviation between the post-opening desired target positions and the actual positions of each market maker at the conclusion of the first stage. (emphasis added); and

- Col. 7 lines 13-17:

The opening PRICEs and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position.

- Col. 10 lines 40-54:

The final step is to determine the (coordinated) value(s) of  $\sigma_{sub.j}$  in equation (1) for which the corresponding values of  $\sigma_{sub.i}$  maximize the total weighted volume traded over all option series. For these particular volatility value(s),

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the corresponding price is determined for each series, and the two nearest trading increments above and below this price are identified. If there exists at both price increments a corresponding residual imbalance of buyers among the public orders, the controller 2 sets as the opening PRICE the higher of the two, and vice versa for the case of a seller imbalance at both prices. If the imbalance switches from buyers to sellers between the two price increments, the controller 2 selects as the opening PRICE the one yielding the higher mutual satisfaction weighted volume in that series.

- Col. 11 lines 19-25:

Once the values of  $\sigma_{sub.i}$  are determined by one of the above procedures, they are substituted into the  $\sigma$  arguments in equations (3) through (10) below. At the exchange's option, these opening volatilities could be output to the market makers (or other interested persons) prior to proceeding into the second stage optimization of market maker assignments to public order imbalances. This would give the market makers more information upon which to determine their delta and gamma targets as detailed below.

Claim 2: **Rickard et al.** discloses the orders are orders at a market price and are orders for customer accounts (col. 9 lines 15-25).

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Claim 3: **Rickard et al.** discloses disseminating a message that indicates a current imbalance between buy and sell orders (col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

Claim 4: **Rickard et al.** discloses the products are financial instruments (col. 2 lines 63-66; col. 3 lines 62-67; col. 4 line 1).

Claim 5: **Rickard et al.** discloses:

- disseminating a message that indicates a current imbalance between buy and sell orders for the product (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25); and
- wherein determining an imbalance condition, posting an allocation message to market participants, and disseminating an imbalance message over regular periods of time occur between the initial reception of orders and actual opening of the trading system (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

Claim 10: **Rickard et al.** discloses the orders are limit orders and wherein marketable ones of those limit orders are applied to reduce the imbalance (col. 6 line 32 - col. 7 line 17; col. 10 line 40 - col. 11 line 16).



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Claim 11: Claim 11 is written as a computer program product and contains the same limitations as claim 1; therefore, the same rejection is applied;

Claim 12: Claim 12 is written as a computer program product and contains the same limitations as claim 2; therefore, the same rejection is applied;

Claim 13: Claim 13 is written as a computer program product and contains the same limitations as claim 3; therefore, the same rejection is applied;

Claim 14: Claim 14 is written as a computer program product and contains the same limitations as claim 4; therefore, the same rejection is applied;

Claim 15: Claim 15 is written as a computer program product and contains the same limitations as claim 5; therefore, the same rejection is applied;

Claim 18: **Rickard et al.** discloses:

- accept limit orders (col. 3 lines 51-67; col. 4 lines 1-3; col. 8 lines 6-34; col. 12 lines 51-57); and
- allocating the remaining imbalance amongst market makers after applying predefined relative indications to eliminate the imbalance (col. 6 line 34 - col. 7 line 33).

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Claim 19: **Rickard et al.** discloses instructions that cause the computer to determine an opening price based on first free and open quote and whether there is still an imbalance (Abstract; col. 9 lines 33-54).

Claim 20: **Rickard et al.** discloses instructions that cause the computer to execute the entire amount of accumulated shares as a single block at one price (col. 9 lines 33-54).

Claim 21: **Rickard et al.** discloses:

- a plurality of workstations for entering orders (col. 8 lines 10-65);
- a server computer (col. 8 lines 9-10), as a central controller;
- receive orders for a product (col. 8 lines 6-34);
- determine an imbalance condition between received buy orders and received sell orders (col. 9 lines 3-21); and
- post an allocation message to market maker participants to communicate the market maker participants' expected allocations of the imbalance for execution by the market maker participants at an initial opening of the market in the event that the imbalance exists at the opening (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

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Claim 22: **Rickard et al.** discloses the computer program product further comprises instructions for causing the server to receive limit orders for the product (col. 3 lines 51-67; col. 4 lines 1-3; col. 8 lines 6-34; col. 12 lines 51-57).

Claim 23: Claim 23 is written as a computer program product and contains the same limitations as claim 3; therefore, the same rejection is applied.

Claim 24: Claim 24 is written as a computer program product and contains the same limitations as claim 4; therefore, the same rejection is applied.

Claim 25: Claim 25 is written as a computer program product and contains the same limitations as claim 18; therefore, the same rejection is applied.

Claim 26: **Rickard et al.** discloses disseminating a message that indicates a current imbalance between buy and sell orders for the product is a publicly disseminated message (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

Claim 27: Claim 27 is written as a computer program product and contains the same limitations as claim 26; therefore, the same rejection is applied.

Claim 28: **Rickard et al.** discloses instructions to disseminate a message that indicates a current imbalance between buy and sell orders for the product is a publicly

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disseminated message (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

Claim 29: Claim 29 is written as a computer program product and contains the same limitations as claim 28; therefore, the same rejection is applied.

Claim 30: **Rickard et al.** discloses disseminating a message that indicates a current imbalance between buy and sell orders for the product is a publicly disseminated message (Abstract; col. 1 lines 25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25).

***Claim Rejections - 35 USC § 103***

4. Claims 6-9, 16-17, and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rickard et al.** (U.S. Patent No. 6,016,483)

Claim 6: **Rickard et al.** does not specifically disclose establishing a lock-in period that requires market makers to specify whether they accept the last anticipated share allocation received by them in order that their allocation will not be further reduced.

However, Official Notice is taken that establishing a lock-in period (e.g., a period of time when an option is open or available and may be selected, accepted and obligated) is old and well known to one skilled in the art at the time the invention was made. This

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concept is used in the stock market as well as other areas of the business world in the conduct of business. Also, a lock-in period is implied/inferred by **Rickard et al.** in:

- The opening prices and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position (col. 7 lines 13-17); and
- At the second stage, each market maker supplies as input his or her current delta and gamma positions prior to the opening and his or her desired delta and gamma positions after the opening. (If required, other measures, such as theta, rho and vega, also could be included as target variables.) Public orders are allocated to market makers according to the solution to this second optimization problem (col. 7 lines 27-33).

These disclosures of **Rickard et al.** imply/infer a period of time (e.g., a lock-in period) prior to the opening during which market makers may input their desired positions at or after the opening.

Claim 7: **Rickard et al.** discloses applying received predefined relative indications to an imbalance that exists subsequent to establishing the lock-in period (col. 7 lines 27-33).

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Claim 8: **Rickard et al.** discloses allocating the remaining imbalance amongst market makers after applying predefined relative indications to eliminate the imbalance (col. 7 lines 27-33).

Claim 9: **Rickard et al.** discloses determining an opening price based on allocated imbalance amongst the market participants and applied predefined relative indications (col. 6 line 46 - col. 7 line 47).

Claim 16: Claim 16 is written as a computer program product and contains the same limitations as claim 6; therefore, the same rejection is applied;

Claim 17: Claim 17 is written as a computer program product and contains the same limitations as claim 7; therefore, the same rejection is applied;

Claim 32: **Rickard et al.** discloses:

- receiving orders from customers for the product (col. 8 lines 6-34);
- determining an imbalance condition between received buy orders and received sell orders for the product (col. 9 lines 3-21); and
- posting an allocation message to market maker participants to communicate the market maker participants' expected allocation of the imbalance for execution by the market maker participants at an initial opening of the market on the side of the imbalance in the event that the imbalance exists at the opening (Abstract; col. 1 lines

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25-42; col. 6 line 46 - col. 7 line 47; col. 10 lines 40-54; col. 11 lines 19-25) , as disclosed by **Rickard et al.** in the disclosure:

- Col. 6 lines 34-60:

*Each market maker comes to the opening with his or her own current position (as specified by delta and gamma) and his or her desired target position after the opening (as specified by delta and gamma). The desired target position may be dependent upon the absolute and relative values of implied volatilities determined at the opening. These current and target positions impact the market maker's preferences on participation in the rectification of imbalances in public orders among the different series. Thus, according to the principles of the present invention, the assignment of public orders can be optimized across all market makers.*

*The present invention proceeds in two stages. At the first stage, the present invention determines a reasonably consistent set of implied volatilities that will maximize a weighted volume of trades across all series at the opening. At the completion of the first stage, there generally will be a residual imbalance in the public orders in each series that do not match off between buyers and sellers. These residual imbalances among public orders are required to be offset by assigning contra positions to the market makers. Accordingly, at the second stage, the present invention assigns residual public orders to market makers so as to minimize a cumulative measure of deviation between the post-opening desired target positions and the actual positions of each market maker at the conclusion of the first stage.*

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- Col. 7 lines 13-17:

*The opening PRICES and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position.*

- Col. 10 lines 40-54:

The final step is to determine the (coordinated) value(s) of  $\sigma_{.j}$  in equation (1) for which the corresponding values of  $\sigma_{.i}$  maximize the total weighted volume traded over all option series. For these particular volatility value(s), the corresponding price is determined for each series, and the two nearest trading increments above and below this price are identified. If there exists at both price increments a corresponding residual imbalance of buyers among the public orders, the controller 2 sets as the opening PRICE the higher of the two, and vice versa for the case of a seller imbalance at both prices. If the imbalance switches from buyers to sellers between the two price increments, the controller 2 selects as the opening PRICE the one yielding the higher mutual satisfaction weighted volume in that series.

**Rickard et al.** does not specifically disclose over a first plurality of intervals of time prior to a market opening, posting a first corresponding plurality of allocation messages to market maker participants to communicate the market maker participants' expected allocations of the imbalance for execution by the market maker participants at an initial opening of the market on the side of the imbalance in the event that the



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imbalance exists at the opening. However, as stated above, **Rickard et al.** does disclose:

- *At one extreme, there is the optimum implied volatility that can be determined so that there is absolute consistency in implied volatility across all series. At the other extreme, there is the optimum volatility of each individual series that can be determined to satisfy market supply and demand. The present invention computes a set of opening implied volatilities that set a reasonable compromise between these extremes. From these implied volatility value(s), the corresponding price is determined for each option series. The present invention also enables an exchange (or other entity) to determine the compromise point between these two positions (col. 6 line 63 - col. 7 line 7).*
- *When an options exchange opens trading each morning, or reopens trading after a trading halt in the underlying instrument during the trading day, the exchange conducts an opening "rotation" procedure to determine the opening price for each option. The opening rotation may take upwards of 45 minutes, during which time the price of the underlying instrument may change dramatically. Presently, the opening rotation consumes a significant portion of the trading day. Additionally, present methods used by options exchanges to allocate the residual imbalance in public orders to market makers at the opening often results in undesirable and inefficient allocations (col. 1 lines 25-42).*
- *The first and the second stage are independent and either could be implemented without the other. For example, an options exchange may implement only the first stage to determine the opening PRICE for each option but decide to allocate residual*

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*public order imbalances using the present round-robin assignment of the residual contracts to each market maker. Alternatively, an options exchange may implement only the second stage, using the present opening rotation procedure to determine the opening PRICE for each option but utilizing the present invention to allocate residual public order imbalances to market makers. By extension, the present invention also can be used to effect trading in periodic or event driven call market structures (the later not to be confused with call option types) (col. 7 lines 34-47).*

- *Once the values of  $\sigma_{sub.i}$  are determined by one of the above procedures, they are substituted into the  $\sigma$  arguments in equations (3) through (10) below. At the exchange's option, these opening volatilities could be output to the market makers (or other interested persons) prior to proceeding into the second stage optimization of market maker assignments to public order imbalances. This would give the market makers more information upon which to determine their delta and gamma targets as detailed below (col. 11 lines 19-25).*

Therefore, the disclosures of the opening rotation, the round robin, and the output of opening volatilities to market makers prior to proceeding to the second stage optimization by **Rickard et al.** in combination with other disclosures identified above are interpreted by examiner as encompassing the claimed feature of the applicant's invention, i.e., over a first plurality of intervals of time prior to a market opening, posting a first corresponding plurality of allocation messages to market maker participants to communicate the market maker participants' expected allocations of the imbalance for execution by the market maker participants at an initial opening of the market on the

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side of the imbalance in the event that the imbalance exists at the opening. Therefore, examiner rejects the claim.

Claims 33-34: **Rickard et al.** does not specifically disclose an interval of time between each allocation message decreases as the time to the opening decreases, nor an interval of time between each market imbalance message to the public decreases as the time to the opening decreases. However, Official Notice is taken that it was old and well known in the art at the time the invention was made that a system could speed up the occurrence of messages as a time period in which action may be taken grows shorter in order to influence actions by participants in an action or program. The speed-up would provide encouragement and/or pressure on participants to accomplish an action within the time constraints. The same principle applies here, to encourage or influence market maker participation. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of **Rickard et al.** to disclose an interval of time between each allocation message decreases as the time to the opening decreases, and an interval of time between each market imbalance message to the public decreases as the time to the opening decreases, as disclosed by old and well known art, because this could influence market markers to participate expeditiously in the system within established time constraints.

**(11) Response to Argument**

Note: The following sub-sections under section 11 of the Examiner's Answer correspond to the corresponding sub-section of section 8 of the Appellants' Appeal Brief.

**Appellants argue**, at pg. 9, that the independent claims, claims 1, 11, 21 and 32, do not have to recite the missing steps of determining an opening price for a product. The claims recite the elements necessary to distinguish Appellants' invention from the prior art . . . There is no need for Appellants to recite a positive step of determining an opening price for a product.

**Examiner disagrees.** Claims 1, 11, 21, and 32 state in the preamble a method for determining an opening price, a computer program product for determining an opening price, a system for determining an opening price, and a method for determining an opening price, respectively. The bodies of these independent claims do not positively set forth a determination of an opening price, either implicitly or explicitly. The independent claims neither achieve the positive step nor present functionality of determining an opening price, even though the claims' preambles state that as each claim's purpose or objective. Examiner maintains the rejection.

**Appellants argue**, at pg. 10, that examiner has failed to apprise Appellant of the basis for any of the prior art rejections in the final office action. The examiner merely quotes Appellants' claims and quotes passages from Rickard. The examiner does not

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provide any analysis and does not explain how any teaching of Rickard corresponds to the claimed elements.

**Examiner disagrees.** While the prior art may not use the exact language as claimed by appellants, Rickard does present the aspects of Appellants' invention in language that is easily understandable to one skilled in the art. Correlation of Rickard to Appellants' invention does not require a detailed analysis to explain or decipher the invention of Rickard to the skilled artisan. Examiner has identified relevant passages of Rickard that disclose Appellants' invention in the Final rejection, and additional passages in Examiner's response to Appellants' arguments below. Therefore, examiner maintains the rejection.

Claims 1, 2, 4, 10-12, 14, 21, 22, 24 and 25

**Appellants argue**, at pg. 10-11, there is no mention of any messages in Rickard. Rickard mentions "output" at Col. 7 lines 14-17. There Rickard mentions output after the initial market opening. At Column 7 lines 14-18 Rickard states: "The opening prices and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their *post-opening* desired target position." (Emphasis added)

**Examiner disagrees.** The phrase "to determine their post-opening desired target position" is taken by examiner to portray an action occurring before the opening,

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because this is a reasonable time for market makers to plan and adjust their interests to achieve their post-opening desired target position (emphasis added). This disclosure is not saying that the market makers are determining their post-opening position (emphasis added) (i.e., their position as it exists after the market opening), as is inferred by appellant, but rather their post-opening desired target position, which encompasses their goal in all of their actions before the opening. Also, Rickard discloses (at col. 11 lines 19-25) *At the exchange's option, these opening volatilities could be output to the market makers (or other interested persons) prior to proceeding into the second stage optimization (emphasis added) of market maker assignments to public order imbalances.* Rickard's step of proceeding into the second stage optimization occurs before market opening (see figure 2). Examiner asserts that the *outputs* of Rickard provide the functionality of messages as claimed by Appellant. Therefore, examiner maintains the rejection.

Claims 3, 13, 23 and 26-31

**Appellants argue**, at pg. 12, that this claim group deals with the feature of a second message. Claim 3, which is representative of the group adds a further distinguishing limitation of disseminating a message that indicates a current imbalance between buy and sell orders for the product. Although, the Examiner cites the same passages as in the rejection of claim 1 and adds a cite to the passage at Col. 1 lines 25-42, a message is not described in Rickard. Rather, at Col. 7 lines 14-17 Rickard mentions outputting opening prices and corresponding volatilities after the initial market

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opening. However, this is the same output that the Examiner relies upon to anticipate the element of posting an allocation message in claim 1.

**Examiner disagrees.** Rickard discloses:

- (at col. 11 lines 19-23) a communication to market makers: *At the exchange's option, these opening volatilities could be output to the market makers (or other interested persons) prior to proceeding into the second stage optimization of market maker assignments to public order imbalances.*
- (col. 7 lines 14-17) a second communication to market makers: *The opening PRICES and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position.*

Contrary to Appellants' statement, at Col. 7 lines 14-17, Rickard outputs opening prices and corresponding volatilities **before** (emphasis added) the initial market opening. These disclosures, one prior to proceeding to the second stage (which occurs before market opening) and one after the second stage, the second stage occurring before market opening, describe two different communications to market makers. The second disclosure is the result of the second stage, while the first disclosure occurs before the second stage. Therefore, examiner maintains the rejection.

#### Claims 5, 15

**Appellants argue**, at pg. 13, that claim 5 adds limitations of periodically disseminating a public message that indicates a current imbalance and periodically



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determining an imbalance condition and posting the allocation message. Rickard fails to mention periodically outputting anything to the market. Moreover, all that Rickard teaches is to optionally output opening prices and corresponding volatilities for determining post opening target positions.

**Examiner disagrees.** Rickard discloses at least two messages in the disclosures:

- (at col. 11 lines 19-23) a communication to market makers: *At the exchange's option, these opening volatilities could be output to the market makers (or other interested persons) prior to proceeding into the second stage optimization of market maker assignments to public order imbalances.*
- (col. 7 lines 14-17) a second communication to market makers: *The opening PRICES and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position.*

Contrary to Appellants' statement, at Col. 7 lines 14-17 Rickard does not mention outputting opening prices and corresponding volatilities **after** (emphasis added) the initial market opening. These disclosures, one prior to proceeding to the second stage (which occurs before market opening) and one after the second stage, the second stage occurring before market opening, describe two different communications to market makers. The second disclosure is the result of the second stage, while the first disclosure occurs before the second stage. These messages constitute periodic messages communicated (disseminated) to market makers that indicate a current



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imbalance and periodically determining an imbalance condition and posting the allocation message. Therefore, examiner maintains the rejection.

Claims 6, 16

**Appellants argue**, at pg. 13-14, that Rickard cannot support an obviousness rejection of claims 6 and 16, since Rickard only teaches to optionally output opening prices and corresponding volatilities for determining post opening target positions. Rickard fails to suggest establishing a lock-in period that requires market makers to specify whether they accept the last anticipated share allocation. The Examiner readily admits this and relies on Official Notice that establishing a "lock-in period" is old and well known.

Appellants do not claim "lock-in periods" alone. Appellants contend that establishing a lock-in period that requires market makers to specify whether they accept the last anticipated share allocation received by them in order that their allocation will not be further reduced is new and non-obvious over the combination of Rickard and Official Notice since the base reference Rickard is silent on the limiting features of the lock in period and clearly the Examiner cannot take official notice of that which the Examiner has been unable to find in the primary reference or the other cited art, anticipated share allocation messages. Hence, Rickard and Official Notice cannot render obvious a claim that calls for an anticipated allocation that is locked in by the market maker.

**Examiner disagrees.** As stated in examiner's statements above, Rickard discloses communications with the market makers that include "opening volatilities." Since this occurs at a particular point in Rickard's inventive steps, i.e., before proceeding to the second stage and during or at the end of the first stage, this infers a limited or lock-in period for receiving inputs from market makers that encompasses the time period of the second stage up to the dissemination of the second communication at the end of the second stage. Therefore, Rickard encompasses the concept of a lock-in period. Official Notice was taken that establishing a lock-in period (e.g., a period of time when an option is open or available and may be selected, accepted and obligated) is old and well known to one skilled in the art at the time the invention was made, as may be inferred from the disclosure of Rickard. Therefore, examiner maintains the rejection.

Claim 7, 8, 17 and 18

**Appellants argue**, at pg. 14-15, that claim 17 is representative of this group and adds the limitation of instructions to apply received predefined relative indications to an imbalance that exists subsequent to establishing the lock-in period. Rickard does not suggest a predefined relative indication.

**Examiner disagrees.** Examiner asserts that a willingness to trade may be expressed in the values of variables that a market maker may identify to the system as options or other criteria. Market makers may present conditional statements that include values of option variables that may be used to determine the status or value of an option. It would be reasonable that, if particular values of option variables produce

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particular results in option value, these values may be use as discriminators in decision making (e.g., to buy or sell), and thus be used as predefined relative indicators. Therefore, examiner maintains the rejection.

Claim 9

**Appellants argue**, at pg. 15-16, that claim 9 is directed to the feature of determining an opening price based on allocated imbalance amongst the market participants and applied predefined relative indications. Rickard does not allocate imbalance and does not apply predefined relative indications to reduce the imbalance. Hence, claim 9 is neither obvious nor anticipated by Rickard.

**Examiner disagrees.** Rickard discloses:

- (at col. 6 lines 46-60) *The present invention proceeds in two stages. At the first stage, the present invention determines a reasonably consistent set of implied volatilities that will maximize a weighted volume of trades across all series at the opening. At the completion of the first stage, there generally will be a residual imbalance in the public orders in each series that do not match off between buyers and sellers. These residual imbalances among public orders are required to be offset by assigning contra positions to the market makers. Accordingly, at the second stage, the present invention assigns residual public orders to market makers so as to minimize a cumulative measure of deviation between the post-opening desired target positions and the actual positions of each market maker at the conclusion of the first stage.*

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- (at col. 7 lines 1-7) *The present invention computes a set of opening implied volatilities that set a reasonable compromise between these extremes. From these implied volatility value(s), the corresponding price is determined for each option series. The present invention also enables an exchange (or other entity) to determine the compromise point between these two positions.* This discloses the market makers' willingness to participate in the market. Additionally, examiner asserts that a willingness to trade may be expressed in the values of variables that a market maker may identify to the system as options or other criteria. Market makers may present conditional statements that include values of option variables that may be used to determine the status or value of an option. It would be reasonable that, if particular values of option variables produce particular results in option value, these variable values may be use as discriminators in market maker decision-making (e.g., to buy or sell), and thus be used as predefined relative indicators. Thus Rickard discloses allocating imbalance and applies predefined relative indications to reduce the imbalance. Therefore, examiner maintains the rejection.

#### Claim 19

**Appellants argue**, at pg. 16, that claim 19 is a specific way to determine an opening price. The technique is based on the first free and open bid-ask quote published by the market using the opening process and whether there is still an imbalance. Rickard neither describes nor suggests these features. Hence, claim 9 is neither obvious nor anticipated by Rickard.

**Examiner disagrees.** Examiner maintains that claim 19 is disclosed by Rickard at col. 9 lines 3-21. Rickard discloses (at col. 9 lines 4-11) *In stage one, public orders (102) are input to the controller 2 via the order entry system 14 and market maker orders (104) are input to the controller 2 via market maker terminals (4-10). The output of the first stage is a set of prices (implied volatilities) for each series (106). All trades that can occur at that price are executed, and there generally will be, at this stage, a residual imbalance of non-matched orders.* Therefore, examiner maintains the rejection.

Claim 20

**Appellants argue**, at pg. 16, that claim 20 is directed to how trading interest is executed at the opening. It calls for the entire amount of accumulated shares to be executed as a single block at one price. The Examiner cites Rickard at Col. 9 line 33-36 as teaching this limitation. However, all that Rickard teaches there is to allow each series of an option to open independently using a single price call. That is not what is recited in claim 20.

**Examiner disagrees.** Rickard discloses (at col. 4 lines 56-62) *For each series, taking into account public order supply and demand, marker makers signal their bid and offering prices, which converge to an agreed opening PRICE for that series. All public order trades that can be matched at that price are executed, and there generally will be, at this stage, a residual imbalance of non-matched orders.* This disclosure encompasses Appellants' claim language. Therefore, examiner maintains the rejection.

Claims 32-34

The Examiner relies on the same teachings as in rejections of claim 3. Here the Examiner provides some reasoning. The Examiner interprets the disclosures of opening rotation, round robin, and output of volatilities along with the other passages as corresponding to over a first plurality of intervals of time prior to a market opening, posting a first corresponding plurality of allocation messages... ; and over a second plurality of intervals of time prior to the market opening, disseminating a second corresponding plurality of market imbalance messages to the public. The Examiner appears to equate the values of delta and gamma to trading position. This is incorrect as noted above. Again, there is no suggest in Rickard of periodically posting allocation messages and disseminating market imbalances.

**Examiner disagrees.** Rickard discloses periodically posting allocation messages and disseminating market imbalances in the disclosures:

- (at col. 11 lines 19-23) a communication to market makers: *At the exchange's option, these opening volatilities could be output to the market makers (or other interested persons) prior to proceeding into the second stage optimization of market maker assignments to public order imbalances.*
- (col. 7 lines 14-17) a second communication to market makers: *The opening PRICES and corresponding volatilities, once determined by the present invention, can be output to market makers (and, if seen as desirable, to other interested parties) so as to assist market makers to determine their post-opening desired target position.*

Rickard discloses (col. 6 lines 34-41) *Each market maker comes to the opening with his or her own current position (as specified by delta and gamma) and his or her desired target position after the opening (as specified by delta and gamma). The desired target position may be dependent upon the absolute and relative values of implied volatilities determined at the opening.* This disclosure encompasses Appellants' claim language of trading position in the context of disclosing the *market maker's current position (as specified by delta and gamma) and market maker's desired target position after the opening (as specified by delta and gamma).*

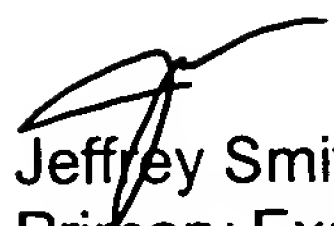
Examiner considers this disclosure to encompass Appellants' claim language (claim 32) of *over a first plurality of intervals of time prior to a market opening, posting a first corresponding plurality of allocation messages to market maker participants to communicate the market maker participants' expected allocations of the imbalance for execution by the market maker participants at the opening of the market on the side of the imbalance in the event that the imbalance exists at the opening; and over a second plurality of intervals of time prior to the market opening, disseminating a second corresponding plurality of market imbalance messages to the public.* Additionally, Appellants' claimed feature of determining an imbalance condition is disclosed by Rickard. Rickard discloses (at col. 11 lines 19-25) *At the exchange's option, these opening volatilities could be output to the market makers (or other interested persons) prior to proceeding into the second stage optimization (emphasis added) of market maker assignments to public order imbalances,* which encompasses Appellants' claimed aspect.

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Therefore, examiner maintains the rejection.

For the above reasons, it is believed that the rejections should be sustained.


Respectfully submitted,




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